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HEAVY METAL BALANCE IN A HUNGARIAN MUNICIPAL SEWAGE TREATMENT PLANT

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Abstract

The present study was undertaken to experimentally evaluate the heavy metal (HM) removal capacity of a municipal wastewater treatment plant (WWTP) as a kind of mass balance. The aim of the work was to find a water or sludge stream in the WWTP that could be treated separately for heavy metal removal to maximize the same efficiency of the whole treatment technology. Although literature says that the HM content of sewage accumulates in the sewage sludge, the experimental results showed no compliance with it.

The results obtained demonstrated that 85-95% of the inlet metal content was discharged into the recipient and only 5-15% was retained in the digested sludge in the studied plant. A few percentage of the metal content of the influent could only be measured in the primary and secondary sludge. Otherwise the metal concentration of these sludge streams was very similar. The reject water had an inconsiderable metal recycle in the technology, not more than 2-3% of the influent load. Approximately 2-10% of the HM inlet was removed by the sand trap.

The separate HM removal from the sludge streams seems to be inadequate since most of the HM load of the plant was finally discharged with the treated effluent to the receiver. This is the reason why the prevention of these contaminants' getting into the sewage is the most important task.

Key words: activated sludge, heavy metals, mass balance, municipal wastewater

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